

(FILE 'HOME' ENTERED AT 10:51:34 ON 12 NOV 2002)

FILE 'INSPEC' ENTERED AT 10:51:50 ON 12 NOV 2002

L1 641579 5  
L2 162902 CARBON#####  
L3 191523 DOP#####  
L4 0 SILICON ADJ CARBIDE  
L5 9321 SILICON (A) CARBIDE  
L6 6346 L2 (P) L3  
L7 156 L5 (P) L6  
L8 1193469 NOR B OR AL OR GA OR IN OR P OR AS OR SB OR SE OR ZN OR O OR AU  
L9 76 L7 AND L8  
L10 133704 VAP#####  
L11 341500 SILICON OR SI  
L12 156 L7 AND L11  
L13 569390 LAYER OR COAT##### OR FILM  
L14 23505 L11 (2A) L13  
L15 12 L7 AND L14  
L16 1225 CARBONIZ#####  
L17 53 L14 (P) L16  
L18 16 L8 AND L17  
L19 4 L17 AND L3

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- L19 ANSWER 1 OF 4 INSPEC COPYRIGHT 2002 IEE  
 AN 1998:6041574 INSPEC DN A9822-6855-009; B9811-0520F-055  
 TI SiC crystallization in **carbonized** Si(111) layers.  
 AU Lei Tianmin; Chen Zhiming; Ma Jianping; Yu Mingbin (Xi'an Univ. of Technol., Xi'an, China)  
 SO Chinese Journal of Semiconductors (April 1997) vol.18, no.4, p.317-20. 6 refs.  
 Published by: Science Press  
 CODEN: PTTFDZ ISSN: 0253-4177  
 SICR: 0253-4177(199704)18:4L317:CCL;1-X  
 DT Journal  
 TC Experimental  
 CY China  
 LA Chinese  
 AB The surface of the silicon substrates on which 3C-SiC thin layers are to be epitaxially grown is **carbonized** by using carbide gas diluted with hydrogen in a HFCVD system, with a filament temperature of 2000 degrees C and a substrate temperature of 950-1100 degrees C. The **carbonized** layers were characterized by X-ray diffraction, electron diffraction and auger electron spectroscopy etc. It is found that the **carbonized** layers consist of a highly carbon-doped **silicon sub-layer**, a 3C-SiC crystalline sub-layer and a **silicon-doped** 3C-SiC crystalline sub-layer. Under the appropriate processing conditions, the proportion of 3C-SiC crystalline sub-layer can be adjusted.
- CC A6855 Thin film growth, structure, and epitaxy; A8115H Chemical vapour deposition; A7920F Electron-surface impact; Auger emission; A8160C Surface treatment and degradation of semiconductors; E0520F Vapour deposition; B2520M Other semiconductor materials; B2550E Surface treatment for semiconductor devices  
 CT AUGER EFFECT; CHEMICAL VAPOUR DEPOSITION; CRYSTALLISATION; ELECTRON DIFFRACTION; SEMICONDUCTOR MATERIALS; SEMICONDUCTOR THIN FILMS; SILICON COMPOUNDS; SURFACE TREATMENT; X-RAY DIFFRACTION  
 ST **carbonized Si(111) layers**; 3C SiC crystallization; epitaxial growth; HFCVD; X-ray diffraction; electron diffraction; Auger electron spectroscopy; 950 to 1100 degC; Si; SiC  
 CHI Si sur, Si el; SiC sur, Si sur, C sur, SiC bin, Si bin, C bin  
 PHP temperature 1.22E+03 to 1.37E+03 K  
 ET C\*Si; SiC; Si cp; cp; C cp; Si; C-SiC; C
- L19 ANSWER 2 OF 4 INSPEC COPYRIGHT 2002 IEE  
 AN 1992:4297987 INSPEC DN A9302-8115H-031; B9301-0510D-056  
 TI Effect of Al **doping** on low-temperature epitaxy of 3C-SiC/Si by chemical vapor deposition using hexamethyldisilane as a source material.  
 AU Takahashi, K.; Nishino, S.; Saraie, J. (Dept. of Electron. & Inf. Sci., Kyoto Inst. of Technol., Kyoto, Japan)  
 SO Applied Physics Letters (25 Oct. 1992) vol.61, no.17, p.2081-3. 13 refs.  
 Price: CCCC 0003-6951/92/422081-03\$03.00  
 CODEN: APPLAB ISSN: 0003-6951  
 DT Journal  
 TC Experimental  
 CY United States  
 LA English  
 AB Low-temperature growth of 3C-SiC by atmospheric-pressure chemical vapor deposition was carried out using hexamethyldisilane (Si2(CH3)6) as a source material. Single-crystal undoped SiC was grown on Si(111) without employing a **carbonized** buffer layer and on Si(100) with a buffer layer. In the case of adding Al CH3.3 to the source gas, the Al-doped initial layer works as a buffer layer which controls the initial nucleation. The Al **doping** lowers the

epitaxial temperature of this gas system down to 1000 degrees C.

CC A8115H Chemical vapour deposition; A6955 Thin film growth, structure, and epitaxy; A7155F Tetrahedrally bonded nonmetals; B0510D Epitaxial growth; B2520M Other semiconductor materials; B2550B Semiconductor doping

CT ALUMINIUM; IMPURITY ELECTRON STATES; SEMICONDUCTOR **DOPING**; SEMICONDUCTOR EPITAXIAL LAYERS; SEMICONDUCTOR GROWTH; SEMICONDUCTOR MATERIALS; SILICON COMPOUNDS; VAPOUR PHASE EPITAXIAL GROWTH

ST PHEED; semiconductor; CVD; low-temperature epitaxy; chemical vapor deposition; Si-SiC:Al

CHI Si-SiC:Al int, SiC:Al int, SiC int, Al int, Si int, C int, SiC:Al ss, Al ss, Si ss, C ss, SiC bin, Si bin, C bin, Al el, Si el, Al dop

ET Al; C\*Si; SiC; Si cp; cp; C cp; C-SiC; C\*H\*Si; (Si2(CH3)6); H cp; Si; C\*H\*Al; Al(CH3)3; Al cp; C; C\*Al\*Si; C sy 3; sy 3; Al sy 3; Si sy 3; SiC:Al; Al doping; doped materials; Si-SiC:Al

L19 ANSWER 3 OF 4 INSPEC COPYRIGHT 2002 IEE

AN 1988:3179061 INSPEC DN B88044778

TI Inversion-type MOS field effect transistors using CVD grown cubic SiC on Si.

AU Shipahara, K.; Takeuchi, T.; Saitoh, T.; Nishino, S.; Matsunami, H. (Dept. of Electr. Eng., Kyoto Univ., Japan)

SO Novel Refractory Semiconductors Symposium

Editor(s): Emin, D.; Aselage, T.L.; Wood, C.

Pittsburgh, PA, USA: Mater. Res. Soc, 1987. p.247-52 of xix+418 pp. 13 refs.

Conference: Anaheim, CA, USA, 21-23 April 1987

Sponsor(s): Mater. Res. Soc.

ISBN: 0-931837-64-2

DT Conference Article

TC Practical; Experimental

CY United States

LA English

AB Inversion-type n-channel MOSFETs of cubic-SiC were successfully fabricated. MOSFETs were fabricated on an antiphase-domain free **layer** grown on Si(100) by **carbonization** and subsequent chemical vapor deposition. An ion implantation technique was used to form the source and drain of the MOSFETs. A gate oxide of SiO2 was formed by thermal oxidation of SiC. Inversion mode operation was confirmed for the first time. Annealing temperature dependence of electrical characteristics of P+ and N2+ implanted layers and characteristics of p-n junction diodes fabricated using the ion implantation technique were also investigated.

CC B0510D Epitaxial growth; B2550B Semiconductor doping; B2550E Surface treatment and oxide film formation; B2560R Insulated gate field effect transistors

CT INSULATED GATE FIELD EFFECT TRANSISTORS; ION IMPLANTATION; OXIDATION; SEMICONDUCTOR **DOPING**; SEMICONDUCTOR GROWTH; SEMICONDUCTOR MATERIALS; SILICON COMPOUNDS; VAPOUR PHASE EPITAXIAL GROWTH

ST semiconductor; annealing temperature dependence; P+ implanted layers; inversion-type n-channel MOSFETs; MOS field effect transistors; CVD grown cubic SiC on Si; antiphase-domain free layer; Si(100);

**carbonization**; chemical vapor deposition; source; drain; gate oxide; thermal oxidation; electrical characteristics; N2+ implanted layers; p-n junction diodes; ion implantation technique; SiC; SiO2; Si

CHI SiC int, Si int, C int, SiC bin, Si bin, C bin; SiO2 int, O2 int, Si int, C int, SiO2 bin, O2 bin, Si bin, C bin; Si sur, Si el

ET C\*Si; SiC; Si cp; cp; C cp; Si; C\*Si; SiO2; C cp; P; P+; P ip 1; ip 1; N2; N2+; N2 ip 1; SiO; C

L19 ANSWER 4 OF 4 INSPEC COPYRIGHT 2002 IEE

AN 1988:3179052 INSPEC DN A88094455; E88043898

TI Highly mismatched hetero-epitaxial growth of cubic SiC on Si.

1 AU Matsunami, H. (Dept. of Electr. Eng., Kyoto Univ., Japan;  
 SO Novel Refractory Semiconductors Symposium  
 Editor(s): Emin, D.; Aselage, T.L.; Wood, C.  
 Pittsburgh, PA, USA: Mater. Res. Soc, 1987. p.171-82 of xix+418 pp. 34  
 refs.  
 Conference: Anaheim, CA, USA, 21-23 April 1987  
 Sponsors: Mater. Res. Soc.  
 ISBN: 0-931837-64-2  
 DT Conference Article  
 TC Experimental  
 CY United States  
 LA English  
 AB Single crystals of cubic SiC were hetero-epitaxially grown on Si by  
 chemical vapor deposition (CVD) method. A **carbonized** buffer  
**layer** on **Si** is utilized to overcome the large lattice  
 mismatch of 20%. Optimum conditions to make the buffer layers and those  
 structures are discussed. Crystal quality of the CVD grown cubic SiC is  
 analyzed by using X-ray analyses and microscopic observations. Electrical  
 properties controlled by impurity **doping** during epitaxial growth  
 are described together with fundamental electronic devices.  
 CC A6170T Doping and implantation of impurities; A6855 Thin film growth,  
 structure, and epitaxy; A8115H Chemical vapour deposition; B0510D  
 Epitaxial growth; B2520M Other semiconductor materials; B2550B  
 Semiconductor doping  
 CT SEMICONDUCTOR **DOPING**; SEMICONDUCTOR GROWTH; SEMICONDUCTOR  
 MATERIALS; SILICON COMPOUNDS; VAPOUR PHASE EPITAXIAL GROWTH; X-RAY  
 DIFFRACTION EXAMINATION OF MATERIALS  
 ST semiconductor; single crystals; electrical properties; highly mismatched  
 heteroepitaxial growth; crystal quality; cubic SiC; chemical vapor  
 deposition; **carbonized buffer layer**; large lattice mismatch;  
 X-ray analyses; microscopic observations; **impurity doping**;  
 electronic devices; Si; SiC  
 CHI SiC bin, Si bin, C bin; Si sur, Si el  
 ET C\*Si; SiC; Si cp; cp; C cp; Si

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ANSWER 21 OF 31 INSPEC COPYRIGHT 2002 IEE

AN 1994:4728093 INSPEC DN A9418-8115H-021; B9409-0520F-045  
TI SiC silicon-on-insulator structures by direct carbonization conversion and postgrowth from silacyclobutane.  
AU Steckl, A.J.; Yuan, C. (Dept. of Electr. & Comput. Eng., Cincinnati Univ., OH, USA); Tong, Q.-Y.; Gosele, U.; Loboda, M.J.  
SO Journal of the Electrochemical Society (June 1994) vol.141, no.6, p.L66-8. 10 refs.  
Price: CCCC 0013-4651/94/\$5.00+0.00  
CODEN: JESOAN ISSN: 0013-4651  
DT Journal  
TC Experimental  
CY United States  
LA English  
AB SiC on insulating substrates has been achieved by the propane **carbonization** of the **Si device layer** of (100) **Si** SOI structures. Subsequent growth with silacyclobutane has resulted in SiC films of 0.5 to 1  $\mu$ m. The SiC films were very smooth and featureless, and the SiC/SiO<sub>2</sub> interface was void-free. FTIR absorption measurements of the SiC SOI structure exhibited peaks at approximately 800 and approximately 1100 cm<sup>-1</sup> indicating the presence of only Si-C and Si-Ox bonding. The FWHM of the Si-C IR line is 25 cm<sup>-1</sup>. X-ray diffraction measurements exhibit only the SiC (200) peak, confirming the 3C-SiC polytype. Auger depth profiling of the SiC SOI structure indicates an SiC film of uniform composition, and complete conversion of the original.  
CC A8115H Chemical vapour deposition; A6855 Thin film growth, structure, and epitaxy; A7865J Nonmetals; A7830G Infrared and Raman spectra in inorganic crystals; A6848 Solid-solid interfaces; B0520F Vapour deposition; B2530F Metal-insulator-semiconductor structures  
CT AUGER EFFECT; BONDS (CHEMICAL); CHEMICAL VAPOUR DEPOSITION; FOURIER TRANSFORM SPECTRA; INFRARED SPECTRA OF INORGANIC SOLIDS; INTERFACE STRUCTURE; POLYMORPHISM; SEMICONDUCTOR GROWTH; SEMICONDUCTOR-INSULATOR BOUNDARIES; SILICON COMPOUNDS; X-RAY DIFFRACTION EXAMINATION OF MATERIALS  
ST SiC SOI structures; direct carbonization conversion; postgrowth; silacyclobutane; insulating substrates; Si device layer; SiC films; SiC/SiO<sub>2</sub> interface; FTIR absorption; bonding; X-ray diffraction; polytype; Auger depth profiling; uniform composition; SiC-SiO<sub>2</sub>  
CHI SiC-SiO<sub>2</sub> int, SiO<sub>2</sub> int, SiC int, O<sub>2</sub> int, Si int, C int, O int, SiO<sub>2</sub> bin, SiC bin, O<sub>2</sub> bin, Si bin, C bin, O bin  
ET C\*Si; SiC; Si cp; cp; C cp; Si; O\*Si; SiO<sub>2</sub>; O cp; Si-C; Si-Ox; C-SiC; C\*O\*Si; C sy 3; sy 3; O sy 3; Si sy 3; SiC-SiO<sub>2</sub>; SiO; SiC-SiO; O

ANSWER 5 OF 31 INSPEC COPYRIGHT 2002 IEE

AN 1999:6426395 INSPEC EN A2000-02-8115N-002; B2000-01-0520X-019  
TI Transfer of ultrathin silicon layers to polycrystalline SiC substrates for  
the growth of 3C-SiC epitaxial films.  
AU Hobart, K.D.; Kub, F.J.; Fatemi, M. (Naval Res. Lab., Washington, DC,  
USA); Taylor, C.; Eshun, E.; Spencer, M.G.  
SO Journal of the Electrochemical Society (Oct. 1999) vol.146, no.10,  
p.3833-6. 17 refs.  
Doc. No.: S0013-4651(99)03072-4  
Published by: Electrochem. Soc  
Price: CCCC 0013-4651/99/\$7.00  
CODEN: JESOAN ISSN: 0013-4651  
SICI: 0013-4651(199910)146:10L:3833:TUSL;1-C  
DT Journal  
TC Practical; Experimental  
CY United States  
LA English  
AB A novel approach for the production of large area 3C-SiC substrates is  
described. Ultrathin (<20 nm) Si seed layers were transferred to high  
purity polycrystalline 3C-SiC substrates through a unique wafer bonding  
process. The ultrathin **Si** seed **layer** was subsequently  
**carbonized** and used as the nucleation layer for high temperature  
(>1500 degrees C) growth of epitaxial 3C-SiC. The use of more optimal  
growth temperatures, not limited by the melting point of Si, led to 3C-SiC  
films of high crystalline quality. Double-crystal X-ray diffraction  
measurements of the 3C-SiC(200) reflection gave peak widths of 660 arcsec.  
CC A8115N Thin film growth from solid phases; A6855 Thin film growth,  
structure, and epitaxy; B0520X Other thin film deposition techniques;  
B2520M Other semiconductor materials  
CT NUCLEATION; SEMICONDUCTOR EPITAXIAL LAYERS; SEMICONDUCTOR GROWTH; SILICON  
COMPOUNDS; WAFER BONDING; WIDE BAND GAP SEMICONDUCTORS  
ST ultrathin Si layers transfer; polycrystalline SiC substrates; 3C-SiC  
epitaxial films growth; wafer bonding process; nucleation layer; melting  
point; 1500 C; 20 nm; SiC  
CHI SiC sur, Si sur, C sur, SiC bin, Si bin, C bin  
PHP temperature 1.77E+03 K; size 2.0E-08 m  
ET C\*Si; SiC; Si cp; cp; C cp; C-SiC; Si; C